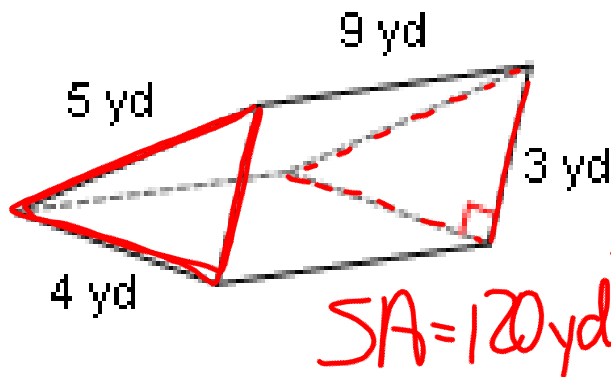


04/21/14 Agenda:

- Warm up problem
- Review Homework
 - Worksheet 2 - Volume of Prisms
- Unit 11 - Day 3
 - Surface Area & Volume of Cylinders
- Mini Quiz tomorrow!
- Homework
 - Worksheet 3 - Cylinders
- Review Unit 10 Test

Warm Up - **Get Your Homework Out!**

Find the Surface Area and Volume of the prism:



$$V = B \cdot H$$
$$6 \cdot 9 = 54 \text{ yd}^3$$

$$SA = LA + 2 \cdot B$$
$$B = \frac{1}{2} \cdot 4 \cdot 3$$
$$= 6 \text{ yd}^2$$
$$LA = P \cdot H$$
$$= 12 \cdot 9$$
$$= 108 \text{ yd}^2$$
$$\begin{array}{r} 108 \\ 6 \\ 6 \\ \hline 120 \end{array}$$

Unit 11 Day 3 - Surface Area & Volume of Cylinders

Target 11B

April 21, 2014

Goal: Find the Surface Area and Volume of a Cylinder.

Review: **Surface Area:** The sum (total) of the areas of the faces.

Lateral Area: The sum (total) of the areas of all the lateral faces.

$B = \text{area of base}$ (formula changes with shape of the base)

$H = \text{height of prism}$ (distance between the bases)

Lateral Area: $LA = P \cdot H$

Surface Area: $SA = LA + 2B$

Volume: The number of cubic units in the interior of a 3-D shape.

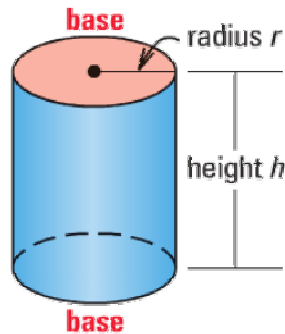
$$V_{Prism} = B \cdot H$$

Unit 11 Day 3 - Surface Area & Volume of Cylinders

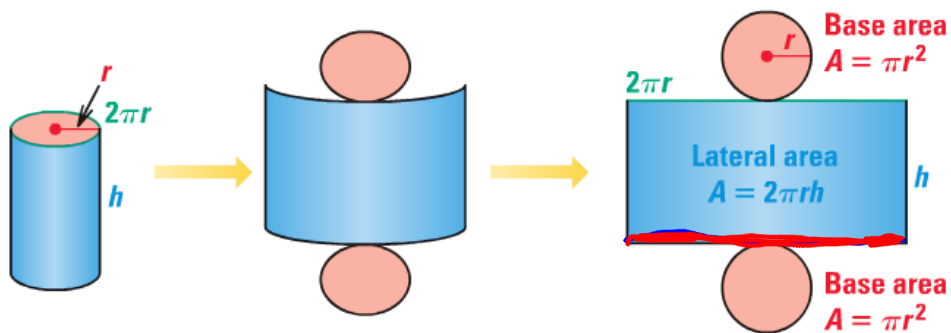
Target 11B

April 21, 2014

Cylinder: A solid with two circular parallel bases.
(think prism with a circular base)



Let take a cylinder apart:



$$B_{\text{Cylinder}} = \pi r^2$$

$$LA_{\text{Cylinder}} = 2\pi r \cdot H$$

$$2A_0 + A_{\text{rect}}$$

$$2(\pi r^2) + 2\pi r \cdot H$$

Surface Area is still $SA = LA + 2B$

Volume of a Cylinder:

If a cylinder is like a prism with a circular base, then it is still a series of bases stacked on top of each other.

$$V_{\text{Cylinder}} = B \cdot H$$

$$V_{\text{Cylinder}} = \pi r^2 H$$

Unit 11 Day 3 - Surface Area & Volume of Cylinders

Target 11B

April 21, 2014

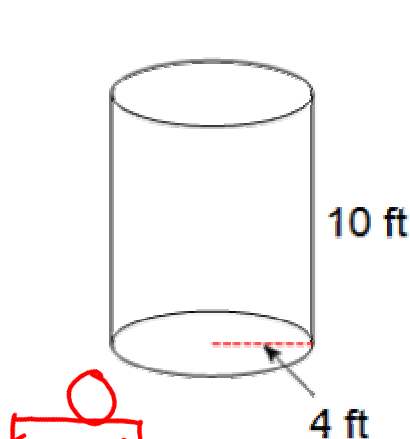
$$B_{\text{Cylinder}} = \pi r^2$$

$$LA_{\text{Cylinder}} = 2\pi r \cdot H$$

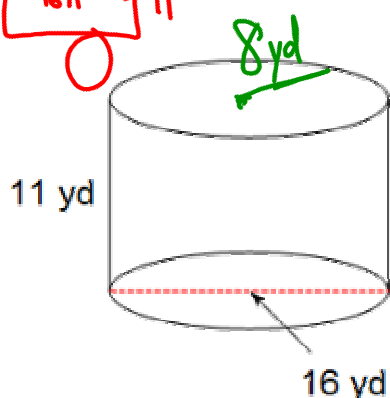
$$SA = LA + 2B$$

$$V_{\text{Cylinder}} = \pi r^2 H$$

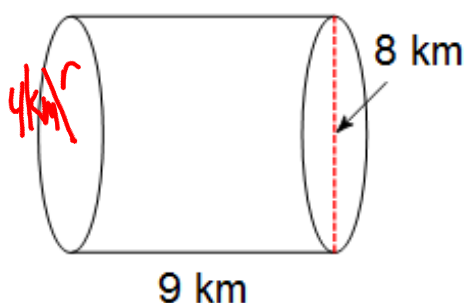
Examples - Find the surface area and volume:



$2\pi r$ Perimeter of Base: $8\pi \text{ ft}$
 (circumference)
 $P \cdot H$ Lateral Area: $80\pi \text{ ft}^2$
 $C \cdot H$
 $8\pi \cdot 10$
 πr^2 Area of Base: $16\pi \text{ ft}^2$
 $LA + 2B$ Surface Area: $112\pi \text{ ft}^2$
 $80\pi + 2 \cdot 16\pi$
 $V = B \cdot H$ Volume: $160\pi \text{ ft}^3$



Circumference: $16\pi \text{ yd}$
 $C \cdot H$ Lateral Area: $176\pi \text{ yd}^2$
 πr^2 Area of Base: $64\pi \text{ yd}^2$
 $LA + 2 \cdot B$ Surface Area: $304\pi \text{ yd}^2$
 Volume: $704\pi \text{ yd}^3$



$2\pi r$ Circumference: $8\pi \text{ km}$
 $2 \cdot 4 \cdot \pi$
 $C \cdot H$ Lateral Area: $72\pi \text{ km}^2$
 $8\pi \cdot 9$
 πr^2 Area of Base: $16\pi \text{ km}^2$
 $4^2 \pi$
 $LA + 2B$ Surface Area: $104\pi \text{ km}^2$
 $72\pi + 2 \cdot 16\pi$
 Volume: 144 km^3
 $B \cdot H = \pi r^2 H = \pi 4^2 \cdot 9$

Unit 11 Day 3 - Surface Area & Volume of Cylinders

Target 11B

April 21, 2014

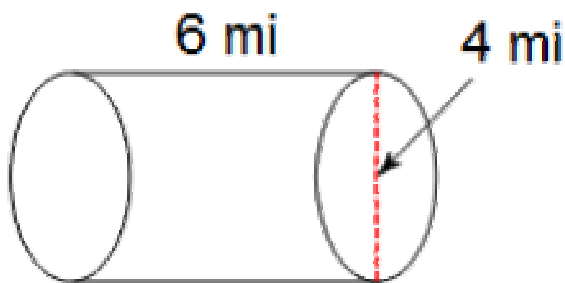
$$LA_{Cylinder} = 2\pi r \cdot H$$

$$B_{Cylinder} = \pi r^2$$

$$SA = LA + 2B$$

$$V_{Cylinder} = \pi r^2 H$$

Examples - Find the surface area and volume:



Circumference: $4\pi \text{ mi}$

Lateral Area: $24\pi \text{ mi}^2$

Area of Base: $4\pi \text{ mi}^2$

Surface Area: $32\pi \text{ mi}^2$

Volume: $24\pi \text{ mi}^3$